

Indiana University - Purdue University Fort Wayne  
**Opus: Research & Creativity at IPFW**

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2000 IPFW Student Research and Creative  
Endeavor Symposium

IPFW Student Research and Creative Endeavor  
Symposium

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4-18-2000

# Proceedings Undergraduate Research and Creative Endeavor Symposium

Office of Undergraduate Research and Creative Endeavor  
*Indiana University - Purdue University Fort Wayne*

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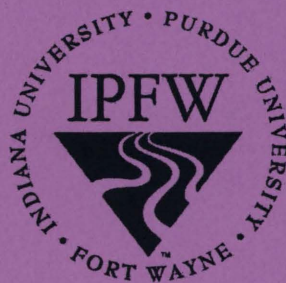
**PROCEEDINGS**  
**Undergraduate Research**  
**and**  
**Creative Endeavor Symposium**

**The**  
**Sigma XI Competition**  
**and**  
**Graduate Student Presentations**

**April 18, 2000**  
**Walb Memorial Union**

**and**

**ANNUAL REPORT**  
**Office of Undergraduate Research**  
**and**  
**Creative Endeavor**



**Indiana University-Purdue University Fort Wayne**

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# **ROSTER**

## **Undergraduate Research and Creative Endeavor Committee**

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**Department of Physics**

**Clifford H. Scott 1998-00**  
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**Department of Music**

**SCHOOL OF BUSINESS AND MANAGEMENT SCIENCES,  
SCHOOL OF EDUCATION,  
SCHOOL OF ENGINEERING, TECHNOLOGY, AND COMPUTER SCIENCE  
DIVISION OF ORGANIZATIONAL LEADERSHIP AND SUPERVISION,  
DIVISION OF PUBLIC AND ENVIRONMENTAL AFFAIRS**

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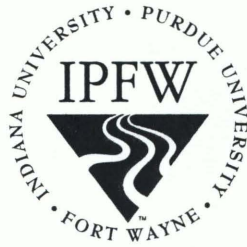
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**School of Education**

**Patricia A. Sellers 1998-00**  
**School of Education**

### **AT-LARGE**

**George S. Mourad 1998-01**  
**Department of Biology**

**PROCEEDINGS OF THE  
UNDERGRADUATE RESEARCH  
AND  
CREATIVE ENDEAVOR  
SYMPOSIUM**



VICE CHANCELLOR FOR ACADEMIC AFFAIRS

A MESSAGE FROM  
THE VICE CHANCELLOR FOR ACADEMIC AFFAIRS

Welcome to the third Undergraduate Research and Creative Endeavor Symposium. I am looking forward to the day's presentations. The range of subject matter is representative of the breadth of the academic enterprise at IPFW. This university is truly comprehensive, and its comprehensiveness has been embraced by the citizens of northeastern Indiana of which you are one. The range of subject matter is also stimulating. Indeed, one of the distinct values of the symposium is the opportunity to communicate about our important and specialized studies across disciplinary lines.

Like last year, the presentations come from fifteen academic departments. The list of departments and disciplines, however, changes. For the first time students from the Division of Public and Environmental Affairs, students from the Department of Management and Marketing, and students from the Department of Visual Arts are participating. Program diversity, measured by department affiliation, indicates that the opportunity to learn by doing research is widespread at IPFW. And your participation in this symposium implies that you are enthusiastic about the opportunity to learn in this manner.

Susan B. Hannah  
April 2000



# **ABSTRACTS**

# **SCHOOL OF ARTS AND SCIENCES**

## CONVERSATIONAL PATTERNS OF A MOTHER AND HER TWINS

Cynthia A. Stahl

Sponsor: Lucille J. Hess

Department of Audiology & Speech Sciences

Research shows that triadic conversations offer unique opportunities for infants to learn language. Children were able to monitor language in conversations, join into an ongoing conversation and be a part of a conversation that involved more than one person. It was thought that the influence of an older sibling might be responsible. This research was done to see what the outcome would be if the triad was made up of a mother and twins as opposed to a mother-infant-sibling. A set of opposite sex twins was observed in free play with their mother. These observations began when the twins were age 18 months and continued at three-month intervals until age 2 years 6 months. At age 2 years 3 months, the mother and Twin 1 were the dominant conversational partners. They had a balanced number of utterances in their conversations compared to the mother and Twin 2. Twin 1 also would successfully shift a conversation from the mother and Twin 2, thereby taking over the topic. Observations at age 30 months provided interesting contrasts. The twins were more even in the number of conversational turns taken. This time they were equal in the number of times they entered into a conversation involving the other twin. The mother was more aware of Twin 1's desire to turn the conversation to him so he was less successful in shifting the conversation. Also, the mother directs more questions to Twin 2 to facilitate conversation. The dominant factor in the differences between the two observations was the role of the mother in the triadic conversations.



## MOLECULAR MAPPING OF A GENE INVOLVED IN THE UPTAKE OF NUCLEOTIDES, THE DNA BUILDING BLOCKS

Sarah E. Fey, Joshua Prabhakar, George S. Mourad

Sponsor: George S. Mourad

Department of Biology

A putative uracil transporter in *Arabidopsis thaliana* is encoded by a nuclear gene *FOR1*. This study will attempt to map and characterize *FOR1* to a particular locus in the *Arabidopsis thaliana* genome. Here we use a fluoroarotic acid (FOA) resistant mutant, *for1*, of *Arabidopsis thaliana* that is defective in the uptake of uracil. Our mapping strategy will utilize cleaved amplified polymorphic sequences (CAPS) markers using the technique of polymerase chain reaction (PCR). CAPS markers are ecotype specific sequences that show different patterns of amplification in the *Colombia* and *Landsberg erecta* ecotypes of *Arabidopsis*. A cross between fluoroarotic acid resistant *for1/for1* *Colombia* with *Landsberg erecta* led to F<sub>1</sub> plants which show banding patterns of both *Colombia* and *Landsberg* ecotypes. The banding patterns of PCR amplified DNA that was extracted from fifty *for1/for1* F<sub>2</sub> mutants resistant to FOA will be analyzed. The map position of *FOR1* will be determined using recombination frequencies between each of the CAPS markers and the fluoroarotic acid resistant mutant encoded by *for1*.

## ISOLATION OF A FEATHER-DEGRADING BACTERIA FROM THE PLUMAGE OF REPTILES

Leisel D. Masson

Sponsor: Deborah D. Ross

Department of Biology

Molting in birds represents a significant energy drain and is generally timed to coincide with seasonal abundance; however, non-seasonal molting is common. In order to justify the extreme physiological stress of non-seasonal molting, a significant benefit must be gained by the bird. One possible hypothesis for this is that feather-degrading bacteria, normally present on the plumage, could lead to significant deterioration of the feather's microstructure if it were not molted. In order to test this hypothesis, feathers collected from raptor plumage were placed in cultures of nutrient broth and observed for bacterial growth. Cultures that developed turbidity were streak plated onto solid TSA medium for isolation. Pure cultures were inoculated into mineral salts medium containing 2-cm sections of whole feathers as a sole carbon source. Isolates that demonstrated ability to degrade feathers into less than 0.5-mm sections were identified through standard laboratory tests. Of the ten birds collected for testing, none yielded cultures for enrichment and isolation. Of these nine birds, an average of 2.2 feather-degrading bacteria were isolated per individual bird. All isolates have been determined to be Gram positive, endospore forming rods, which indicates that they belong to genus *Bacillus*.

## EXPANDED HEALTHCARE IN VETERINARY MEDICINE

Rachel Seabold, Andrea Baker

Sponsor: Tim Johnson

Department of Biology/Pre-Vet

In the past, preventative care in small animal veterinary medicine has consisted primarily of routine vaccinations and check ups. But in the last few decades great strides have been made in the services now available to pet owners. One obstacle that veterinarians and technicians alike have had to overcome in order to provide the best care possible has been the increased number of exotic animals as domestic pets. With the introduction and increased popularity of such exotic species, the veterinary field has had to respond quickly with new and inventive solutions for treating and maintaining the health and life expectancy of a wide variety of animals. A survey of area veterinary hospitals regarding the range of species they treat, as well as the increase in services offered, was taken to determine how this trend has impacted the animal health care field. The responses were analyzed to determine the degree of influence that exotic animals may or not have on small animal veterinary practices.



UNDERSTANDING THE BINDING SITE OF A NOVEL ORGANIC-BASED RNA  
CLEAVING-AMINOGLYCOSIDE ANTIBIOTIC

Gordon R. Huffman

Sponsor: Jeffrey B.-H. Tok

Department of Chemistry

In this present work, we initiate the synthesis of aminoglycoside antibiotic tethered to an organic-based cyclen moiety. This cyclen-aminoglycoside conjugate molecule is expected to specifically bind the A-site of the decoding region of 16S rRNA, and subsequently cleaves this A-site bulge to prevent further binding of antibiotics.

## TOWARDS THE SYNTHESIS AND STUDIES OF "SUPER"-AMINOGLYCOSIDE ANTIBIOTICS

Mai Lu

Sponsor: Jeffrey B.-H. Tok

Department of Chemistry

In this present work, we synthesized a series of guanino-derivatized aminoglycoside antibiotics to investigate the hypothesis that additional amino-groups in aminoglycoside antibiotics are able to enhance the binding efficiency to RNA targets.

FOURIER TRANSFORM NMR MEASUREMENTS OF SPIN-LATTICE  
RELAXATION IN COMPLEX HYDRIDES,  $[\text{MH}_6]^{4-}$  (M= Fe and Ru)

Stacci N. McVay

Sponsor: Donald Linn

Department of Chemistry

This research has determined the spin-lattice nuclear magnetic relaxation times ( $T_1$ ) in ruthenium hydride and iron hydrides,  $[\text{MH}_6]^{4-}$  (M= Fe and Ru). This research gives insight into the molecular structure and dynamic properties of complex hydrides. Complex hydrides are important catalysts in assorted reactions of hydrogen and its compounds.



## A NEW TRANSITION METAL HYDRIDE, $[\text{RuH}_6]^{4-}$

Gabriel M. Skidd

Sponsor: Donald Linn

Department of Chemistry

In our earlier work iron was the transition metal of choice for the synthesis of complex hydrides. This synthesis, which was an improved bench top synthesis, worked very well for the iron hydrides. A modified method was used with ruthenium to prepare a new complex transition metal hydride.  $^1\text{H}$  NMR was used to characterize the ruthenium hydride,  $[\text{RuH}_6]^{4-}$ . The analysis of the hydrogen uptake data and a product study by gas chromatography determined that hydrogenation of the benzene by-product was taking place. Newer approaches are being sought to improve purity and yield of the ruthenium hydride.

## WALT DISNEY'S DIVINELY INEPT CHILDREN'S CLASSICS

Amanda Marie Miller

Sponsor: Sophie Glazer

Department of English and Linguistics

I am using Walt Disney's *The Little Mermaid* to explore the ways in which we Americans have become uncomfortable with religious and moral questions. Through the years, Walt Disney has dominated the market of children's entertainment, and in doing so he has become one of the greatest educators of this century. Due to this international fame, Disney's animated classics are often scrutinized by contemporary standards; however, one very important issue is continually overlooked by the critics: religion. When comparing Disney's reinterpretation of standard folk tales to the original story, the audience will discover that the original tale's strong religious content has vanished in the newer version of the story, only to be replaced with sexual romance, comic relief, ridiculously distorted religious figures, and devilish villains. While these general story-line variations are found in almost all of Disney's fairy tale reinterpretations, one excellent example is Disney's *The Little Mermaid*.

"WHEN YOU LOSE YOUR NEIGHBORHOOD, YOU LOSE EVERYTHING...":  
A STUDY IN THE LOSS OF A LANGUAGE

Carly M. Myers

Sponsor: Beth Simon

Department of English and Linguistics

Research shows that the Syrian population in Fort Wayne, Indiana is losing its connection to the Arabic language of the parent generation. The information obtained was for the purpose of determining why fewer Syrians are able to speak the "mother tongue" and why they seem to be losing their responsibility to the history of their people as well as their identification as Arabic speakers in America. This research was obtained from a series of in-depth interviews with my grandfather (member of the Syrian population; parents immigrated to America during the early part of the 1900s) that revealed a serious side of his character and identity that was previously unknown to me as a granddaughter and as a researcher. Analysis of the study revealed that there are three primary reasons why the children of the older generation have become Americanized in their use of language and why the connection to the Syrian culture has diminished. They are tied to the following ideas and concepts: (1) solidarity and group socialization, (2) being a member of a diglossic speech community, and (3) the lack of strictness and practice as Arabic gets passed from one generation to the next. These results are largely connected to the Social Network Theory, developed by British sociolinguist Leslie Milroy, that discusses the density and multiplexity of a community and how these characteristics influence the group dynamic. Likewise, another concern raised from this study is the vitality of the Arabic language in Fort Wayne. It appears that Arabic is slowly deteriorating into a dead language within this city. This study also demonstrated strongly that the emotional connection to the "mother tongue" in combination with the struggle to be a part of the American culture greatly influences the amount of guilt a Syrian feels later in life. These findings are useful for sociolinguists who continually search for ways to promote diverse cultural settings in which multiple languages can be maintained and for sociolinguists who study language acquisition and vitality. In addition, this research is useful to educators who seek to understand children who grow up in an environment that is driven by the use of multiple languages in different settings (home, school, etc.).



## MINERAL COMPOSITION IN THE BALDWIN CONGLOMERATE

Willard D. Barnhouse

Sponsor: Anne Argast

Department of Geosciences

The Baldwin Conglomerate is a meta-conglomerate of Early Proterozoic age within the Mountain Shear Zone of northeastern Wisconsin. The geochemical characteristics of its detrital zircons and Rare Earth Element minerals can be used to develop a fingerprint of the rock unit. These features may help identify provenance and provide a means for comparison with other sedimentary rocks in the region. The Thunder Mountain Quartzite is located approximately 20 km north of the shear zone and is presumed to be older than the Baldwin Conglomerate. Large clasts of quartzite material in the conglomerate have been interpreted as detrital material originating from the Thunder Mountain Quartzite. Chemical analysis and comparison of mineral compositions from both formations suggest this is a possibility. However, the chemical evidence is insufficient to confirm the Thunder Mountain Quartzite is the source of quartzite found in the Baldwin Conglomerate.

MINERALOGICAL ANALYSIS OF THE THUNDER MOUNTAIN QUARTZITE:  
DETERMINING AGE RELATIONSHIPS IN THE MOUNTAIN SHEAR ZONE,  
OCONTO COUNTY, WISCONSIN

Sarah L. Surface

Sponsor: Anne Argast

Department of Geosciences

The Mountain Shear Zone in Oconto County, Wisconsin, is comprised of metaigneous and metasedimentary rocks accumulated as part of the Wisconsin Magmatic Terrance, a volcanic island arc complex approximately 1.9 billion years old. The Shear Zone was severely deformed as the result of the Penokean Orogeny, ca. 1.85 billion years ago. This deformation presents many problems in determining the stratigraphic correlation of strata. In particular, the relative ages of the Thunder Mountain Quartzite and the Baldwin Conglomerate are in question. Chemical and mineralogical analysis of the heavy mineral assemblage of these rocks may shed new light on regional stratigraphic correlations. This paper presents a preliminary report of the chemical analysis of garnets and zircons from the Thunder Mountain Quartzite and the Baldwin Conglomerate.



STRATEGIES FOR PROCESSING CULTURAL AND NATURAL MATERIALS FROM  
SEDIMENTS: A COMPARATIVE STUDY OF GEOLOGICAL WET SIEVING AND  
ARCHAEOLOGICAL FLOTATION METHODS

Sarah Lynn Surface

Sponsor: Edward Smith, Department of Sociology and Anthropology, James Farlow  
Department of Geosciences

All sciences are dependent on their data sets for the formulation of theoretical models. However, there are many biasing factors acting on archaeological and paleontological data. Therefore, sampling strategies are a key determining factor in the formulation of rigorous hypotheses. Archaeologists and paleontologists employ different methods to sample sediments for microfaunal and microfungal remains. This paper presents a preliminary analysis of the effects of different sediment sampling techniques to prevent bias. Archaeological sediments used for this study were recovered from a Late Archaic site (ca. 5500 - 3500 BP) in the Bethlehem Bottoms, Clark County, Indiana. Paleontological sediments were recovered from a Late Tertiary (ca. 5.0 to 1.8 mya) sinkhole near Pipe Creek Jr., Point Isabel Quadrangle, Indiana.

## MODELING ELECTRICAL CIRCUITS USING DIFFERENTIAL EQUATIONS

Mansur Omar

Sponsor: Dan Coroian

Department of Mathematical Sciences

Second order differential equations are used to model the behavior of RLC circuits. All possible cases (*underdamped*, *critically damped* and *overdamped*) are analyzed and the results are discussed for various values of the parameters R (*resistance*), L (*inductance*) and C (*capacitance*). The theoretical results obtained are compared to those obtained from practical experiments.

## AN EXPLORATORY ANALYSIS OF DAYDREAM CONTENT, SEPARATION-INDIVIDUATION CONCERNS, AND SELF-CONCEPT DURING ADOLESCENCE

Rene` M. Dickerhoof, Jennifer R. Marlow

Sponsor: Lesa Rae Vartanian

Department of Psychology

Research suggests that numerous stereotypes regarding adolescent development, behavior, and personality persist. For example, adolescents are thought to be egocentric and self-absorbed, moody, and angst-ridden. Another popular stereotype is that adolescents are wildly idealistic, and tend to live only for the moment. In this study, we analyzed the content of early, middle, and late adolescents' daydreams in order to explore these commonly held stereotypes further. We also examined the relations among aspects of daydream content, age, sex, separation-individuation concerns, and aspects of self-concept as a way of investigating whether and how daydreaming contributes to self-concept and identity development during adolescence. Early, middle, and late adolescents ( $N = 300$ ) were asked to respond in writing to the question "*When you daydream, what do you daydream about?*" Six aspects of daydream content were then coded into the following categories: Context, Temporal Orientation, Reality Orientation, Emotional Quality, and the Self-Focused nature of responses. The apparent Emotional Tone of the daydreamer was also coded. Generally speaking, the majority of adolescents' daydreams were about interpersonal/relational or identity issues, were set in the present time, were self-focused, realistic, and were about positive topics and scenarios. The apparent tone of the daydreamer was also largely positive. Facets of daydream concept were related to perceived competence and progress on parent-adolescent separation-individuation, demonstrating that adolescents' private thoughts may be related to their progress on key developmental tasks of adolescence. The findings also allude to the importance of daydreaming for positive adjustment during adolescence.



## PERCEPTIONS OF AGGRESSIVE PARENTAL BEHAVIORS AND THE IMPACT ON ADULT SELF-CONCEPT: THE ROLE OF PERCEIVED PARENTAL SUPPORT

Carrie L. Giant

Sponsor: Lesa Rae Vartanian

Department of Psychology

Every year in the United States two million children are subjected to maltreatment, and over 90% of parents use physical discipline on their children. Decades of research have shown that facets of self-concept in childhood are negatively impacted by maltreatment and physical discipline in childhood. Research on adults has shown similar negative impacts on self-concept due to the same childhood experiences. Researchers have also found that the quality of the parent-child relationship lessens the effects of childhood trauma. However, previous research has employed objective, or frequency-based definitions of maltreatment. Perhaps investigating individuals' perceptions of their parents' actions as "abusive" vs. "disciplinary" may better predict self-concept, than just the frequency of parental actions. The present study investigated how adults' *perceptions* of experiences with aggressive parental actions that occurred during childhood related to self-concept in adulthood, and to the perceived quality of the parent-child relationship. In addition, the role of perceived parent-child relationship quality as a mediator of the negative effects of child maltreatment was also re-evaluated by taking individuals' perceptions of parents' actions into account. Participants ( $N=120$ ) completed three questionnaires, which measured the frequency and perceptions as "abusive" and "disciplinary" of parental actions, current self-concept, and the perceptions of the quality of the parent-child relationship during childhood. Results indicated that, overall, individuals' subjective perception of their parents' actions was a more important predictor of adult self-concept, than the frequency of the actions. The findings highlight the need to consider how individuals' perceptions of past experiences may be related to the extent those experiences affect functioning and adaptation.

## REACTIONS TO AN AMBIGUOUS HYPOTHETICAL PEER GROUP: EVIDENCE FOR AN ADOLESCENT IMAGINARY AUDIENCE?

Jennifer R. Marlow, Rene` M. Dickerhoof

Sponsor: Lesa Rae Vartanian

Department of Psychology

The theory of adolescent egocentrism holds that early adolescents mistakenly assume others are watching and evaluating their every move. A key component of this theory is that adolescents create and react to an imaginary audience that they believe is constantly watching and evaluating them. This tendency is thought to explain increased self-consciousness and susceptibility to peer pressure during early adolescence. Sensitivity to an imaginary audience is said to diminish by late adolescence. The origins of adolescents' imaginary audience sensitivity has eluded empirical verification, and has also been difficult to operationalize. One of the goals of the following study was to refine the measurement of imaginary audience sensitivity, an area often cited as being in need of researchers' efforts. The other was to see if, compared to other age groups, early adolescents are more likely to believe others are always watching and evaluating them. Pre-adolescents, early, middle, and late adolescents ( $N = 598$ ) were presented with a hypothetical peer group conversation about another peer. Participants were told only that the target was either the participant him or herself, or one of two other, same-sex peers. While the comments were clearly evaluative, it was not clear whether they were admiring or critical in nature (e.g., "I can't believe that he did that" and "I don't remember her being this way last year"). The findings did not support the notion that early adolescents believe others are always watching and criticizing them. Across and within all four age groups studied, only about 1 in 5 participants believed that the group was talking about them. The best predictor of that belief was a positive interpretation of the group's evaluative comments (i.e., as admiring). Overall, the results do not provide evidence for an early adolescent imaginary audience.



## TO BE THIN OR TO BE "BUFF": RELATIONS AMONG APPEARANCE-RELATED FEEDBACK AND THE BODY IMAGE CONCERNS OF FEMALES AND MALES

Rhonda M. Passino, Carrie L. Giant

Sponsor: Lesa Rae Vartanian

Department of Psychology

Body esteem has been found to be negatively correlated with susceptibility to appearance-related mass media messages and criticism from family and peers. Most research on body image/esteem has been conducted with females, and has concentrated on the dimension of body thinness, thus making dissatisfaction with one's body seem to be a gender-typed concern. However, males appear to have body image concerns also, particularly when it comes to body muscularity – as demonstrated by the increased use of anabolic steroids and dietary supplements among young males. We examined associations between body esteem along dimensions of thinness and muscularity, appearance-related mass media messages, and appearance-related feedback from family members and from peers in a sample of male and female college students ( $N = 287$ ). Participants completed a measure assessing the extent to which their notions about body image are influenced by mass media messages, their experiences with appearance-related criticism from family and peers, and the extent to which their peers express body image concerns. They also completed a measure of body esteem, and a body shape questionnaire. Previous findings regarding body esteem and susceptibility to mass media messages, and criticism from family and peers were replicated. The results also extend previous research on body image and body esteem by highlighting muscularity as a salient dimension of body image for males. When both dimensions of body image are considered, appearance-related feedback from family, peers, and the mass media are differentially associated with the body image concerns of males and females. Finally, the results suggest that females may be rejecting media images of ultra-thin models as desirable.

## FISHING TECHNIQUES AND ANNUAL PRODUCTION OF THE FISHERMEN OF NORTHERN CHILE

David P. Bell

Sponsor: Lawrence Kuznar

Department of Sociology and Anthropology

According to interviews conducted with Chilean fishermen in the coastal city of Arica, there exists an extreme economic difference among 3 types of fishermen. Despite the impact of *El Nino* upon the environment, the *Artesano* (3<sup>rd</sup> level) fishermen claimed that the causal factor in their current inability to achieve high fish yields was the result of overfishing on the part of the Industrial fishing corporation. To better examine this claim I will present data on some of the fishing techniques that are utilized by each of the three types of fishermen. Secondly, I will compare the techniques with data obtained from a fishing organization, which is responsible for gathering statistical data on fish production.

ON THE DOUBLE - STRANDED TRAIL OF THE KENNEWICK MAN: CONTROVERSY  
BETWEEN THE RIGHTS OF SCIENTISTS AND THE RIGHTS OF NATIVE AMERICAN IN  
PRESERVING THE HUMAN PAST

Tamra L. Reece

Sponsor: Edward E. Smith

Department of Sociology and Anthropology

In July 1996, skeletal remains were discovered along the Columbia River in Kennewick, Washington. Almost immediately, controversy ensued over who would take responsibility for the remains. Indian tribes and local politicians, as well as scientists, filed lawsuits for the rights to rebury versus rights to scientific study. Initial DNA testing, prior to the lawsuits, afforded substantial evidence that Kennewick Man may not be Native American as traditionally defined, but is more likely related to a non-mongoloid Asian population. How will the laws, written for the Native American Grave Protection and Repatriation Act, affect further scientific testing of the 9000 year-old skeletal remains? The implications of this controversy on the final deposition of the remains are discussed in this paper.

**SCHOOL OF BUSINESS  
AND  
MANAGEMENT SCIENCES**



## A COMPARISON OF ECONOMIC WELL-BEING OF WOMEN IN UNITED STATES TO THAT IN BRAZIL

Nelson D. Lourenço, Martha J. Miles, Tania R. Sebastiao

Sponsor: Hedayeh Samavati

Department of Economics

This research analyzed the economic similarities and differences of women in two different countries. The research was conducted by reviewing articles written in women's magazines, and several scholarly journals including, Journal of Economic Literature, Cato Journal, Society in Transition Journal, and Journal of Ethnology, in order to explore the relationship in the economic well being of women between the two countries. Special attention was directed toward the issues of education, female owned business, poverty, health care, marital status, single parenthood, child care, unemployment, job opportunities and wages. Then, the researchers classified these issues in terms of local and national impact and recorded the findings for posterior comparison between the two countries. Results indicate that economic problems of women in Brazil concentrated almost entirely in urban communities. In the United States, they are also concentrated more frequently in urban areas. The data show that race, ethnicity and class are important factors to consider in comparing the well-being of women in the United States and Brazil.



## THE GLASS CEILING, WHAT IS IT, DOES IT STILL EXIST, & WHAT ARE ITS EFFECTS?

Robin L. Smith, Jason J. Roebel, Herminia V. Costa

Sponsor: Hedayeh Samavati;  
Department of Economics

"Glass Ceiling" was a term that was first introduced in America's public conversation less than a decade ago by the Wall Street Journal's "Corporate Woman" column. It has been defined as the invisible barriers that prevent women and minorities from reaching the highest executive posts in the business world, regardless of merit. The purpose of our investigation is to find out whether "glass ceiling" is still an issue as we enter the 21<sup>st</sup> century. The paper examines the history of glass ceiling, explores different types of barriers, and consequences of these barriers on careers and lives of women who are confronted by them. In addition, possible solutions and strategies for breaking down the glass ceiling are reviewed. The findings of this paper should be valuable to women and minorities who confront unwarranted barriers and have been held back by the "glass ceiling." Knowledge is the most effective way to reduce and eventually eliminate those barriers that adversely affect two-thirds of the population.

## **ECONOMIC IMPLICATIONS OF DIVORCE**

**Joe Mattox, Gloria Rodrigues, Sahsha Spangler, Sharon Zumbrun**

**Sponsor: Hedayeh Samavati**

**Department of Economics**

Research shows that over half of all marriages end in divorce. This paper examines the economic implications of divorce for women and men in American society. The paper highlights the differences in living standards for men and women that result from divorce and how responsibilities of supporting children affect economic outcome. Research suggests that although men tend to be displeased with the outcomes of divorce settlements, men's standard of living increases after divorce. In contrast, women tend to be satisfied with the outcomes of divorce settlements while their living standards actually decline. Women usually obtain custody of children in divorce settlements. This paper examines the financial burden brought on by child custody and the child support payments system and its implication on a woman's standard of living.

## VIRTUAL HEALTH CARE?

Ayesha Rahman

Sponsor: Ali Mir

Department of Management & Marketing

Healthcare, a \$1.1 trillion business in 1998, is the single largest sector in the US economy with an estimated annual growth rate of 7 percent for the next five years. The healthcare industry in general has not been a leader in adapting to and using e-commerce technologies. However, different sectors within this industry have adopted varying e-commerce strategies in recent years. This move has significant implications for both the business of healthcare industry and for the population of patients it serves.

This research presentation is based upon a systematic examination of the healthcare industry, its increasing reliance on technology, and its move towards e-commerce. By using contemporary real-life examples, it critically examines the trend of the use of e-commerce technologies in the healthcare industry and the multiple issues that this generates. It pays particular attention to the potential pitfalls of e-commerce, especially in the light of the recent public debates on patient rights. It suggests that informed citizen input is vital to the future of "virtual health care."

### *Outline of Research Presentation*

1. Introduction: What is e-Commerce?
2. Limits: What e-Commerce Cannot Do
3. Resources: Healthcare on the Web
4. Warning Signs: Do's and Don'ts of Electronic Health Care
5. Dollars and Sense: Cost of e-Commerce
6. Beyond the Bottom Line: Ethical Issues in Healthcare e-Commerce
7. Little Brothers Are Watching You: Privacy of Patient Records
8. Trends: What the Future Holds, What You Can Do

# **SCHOOL OF EDUCATION**



## CONSTRUCTING CONCEPTS IN MATHEMATICS: A NEW INSTRUCTIONAL STRATEGY

Kelly S. Blosser

Sponsor: Patricia Sellers

School of Education

Research shows that students understand and can apply concepts of mathematics better if they are thinking and reasoning on their own. Students learn better if they are interested and are given the chance to explore, particularly when using math manipulatives. The purpose of this research was to determine whether students excelled and/or developed a greater depth of understanding of mathematical concepts and relationships when mathematics is presented in such a way as to ask that students do their own thinking. Whether or not this style of presenting mathematics is successful with students in the classroom depends to a great extent on how the students react to this new instructional strategy. The research was conducted by reading various articles relating to teaching mathematics in ways other than the traditional style. A “construct a concept” lesson plan on fractions was written and implemented in a first grade classroom. The students were developing the concept of what one-fourth is in relationship to the whole. Analysis of the lesson demonstrated that students understood the concept of one-fourth and were then able to apply their knowledge on an assessment that followed the lesson. Also, students were interested and active at all times during the lesson. These findings are useful to teachers for planning math lessons on introducing new math concepts.



## JOHN S. IRWIN ELEMENTARY SCHOOL: HISTORY AS A MAGNET SCHOOL

Aaron B. Brune

Sponsor: Kathleen Murphey

School of Education

Officially, our society offers all children an equal educational opportunity. As a society, we publicly proclaim the myth of standardization in public education. However, as individual parents, we contradict this myth. The reality is that we tend to strive to ensure that our own children have an education that is a little bit more equal than that of other children. We don't want the average school for our children; we want the best school. How can we justify our actions if all schools are the same? Our public proclamations cannot be sustained by our private actions. Historically, as parents attempt to find the best education for their children, schools become segregated. Segregation is sometimes a byproduct of life, and sometimes an active choice.

By its very nature, desegregation requires children of different races to share the same schools and classrooms, thereby enjoying the same educational privileges. As part of the desegregation process, magnet schools are made formally different from regular schools. Magnet schools are not standardized schools because they attempt to draw students from all over a district in an effort to integrate the student population. This is the history of one school, in one community, that was selected in an attempt to deal with the problem of segregation. This is the history of Irwin Elementary School, in Fort Wayne, Indiana, that was transformed into a Magnet School as part of an attempt to implement a solution to segregation within the district. Now the 'experiment' has matured, and one must ask the question, "Has the FWCS desegregation program been successful?" In terms of strict desegregation goals, the answer is a definite yes. However, a nagging question continues to haunt us, "What is the purpose of a magnet school?" Is the purpose educational excellence, school choice, or integration? The answer is never simple.

## THE IMPORTANCE OF MUSIC IN AMERICA'S SCHOOLS

Matthew S. Cashdollar

Sponsor: Kathleen Murphey

School of Education

Economic crisis has led many American schools to cut back or even drop the arts. In an attempt to cut back on costs and to allow more room for academics, the arts become a silent victim. The reality is that cutting out arts programs, specifically music, costs school systems more and deprives the students of a truly balanced curriculum. With recent scientific studies on the positive effects that music has on the human brain, the importance of music is more apparent than ever. The arts are what make us complete as humans; therefore, music and the arts should not only be kept in America's schools, but should be included as core curriculum at all levels of education in all fifty states.

## PUBLIC SCHOOL SYSTEMS VERSUS A VOUCHER SYSTEM

Theresa E. Grotrian

Sponsor: Kathleen Murphey

School of Education

Throughout history, society has struggled to achieve equal educational opportunities for all students. A new effort in current debate to accomplish this goal proposes the creation of education vouchers: publicly provided funds granted to all students so that they may enroll in the certified school of their choice. Proponents of such a plan argue that voucher systems will increase school efficiency, increase student achievement, and provide an education that responds to the desires of parents. However, as proponents' studies may claim these arguments true, opponents to the voucher system present a strong counter-argument in their claims that comparing privately operated schools to public schools on these grounds is an unfair comparison because each operates under different terms. Furthermore, as opponents look to the future of schools operating under a voucher system, they give warning that such a system would likely work against the democratic goal of equal education as it would provide an environment for students to re-segregate. Within the literature, opponents' studies and claims seem to provide effective and worthwhile counter-arguments that a voucher system would, indeed, create more problems than it could solve. Even certain educators teaching within voucher school systems claim that the "system", itself, was not the reason for improvement, but the increased teacher autonomy in re-organizing the school's atmosphere actually led to the positive changes. In order to promote and maintain the democratic ideals of our nation as a whole while simultaneously providing an educational environment where all students have the opportunity to succeed, it appears that increasing the educator's control over school organization may be an option worth considering before vouchers.



## EARLY TEENS AND MONEY

Nancy K. Mann

Sponsor: Dorace Smith

School of Education

Money is a very important issue for teens below driving age and for the people that market to them. Because this group is growing in size and in economic power (an estimated \$14 billion per year) it is getting a lot of attention. The purpose of this study was to examine five particular issues regarding early teens and money. These issues are: (1) allowances, (2) early teens' sources of money, (3) saving money, (4) spending priorities and (5) spending responsibilities. A 14-item questionnaire was administered to 72 thirteen-and fourteen-year-olds from Fort Wayne, Indiana. The data was summarized as a whole and by sex. From this study it was concluded that: (1) allowances are a very important source of income but primarily for discretionary items; (2) early teens want to earn money and are willing to work to do so (most work to earn money is done around the home); (3) early teens are savers with an eye for longer-term goals such as automobiles and college; (4) spending is focused on social and status content of the purchases as well as the pleasure they bring; (5) most early teens still receive a good deal of parental support for their discretionary spending.



## HISTORY AND FUTURE OF SPANISH IMMERSION IN FORT WAYNE COMMUNITY SCHOOLS

Leslie Raymer

Sponsor: Kathleen Murphey

School of Education

The History of the Spanish Immersion program at Lindley Elementary School (in the Fort Wayne Community School system) parallels that of language immersion schools in systems elsewhere over the last 15-20 years. The Lindley program was born of the settlement between the school system and Parents for Quality Education through Integration.

While the settlement has survived unchallenged for over a decade, and has served as a model for magnet programs in other communities, it did not address the specific needs of Hispanic students and families. As the Hispanic population grows, the unique needs of that community will most certainly need to be directly addressed.

The history and future of single and dual immersion language programs are compared, and the unique challenges facing the local Spanish Immersion program is discussed in historical and contemporary social and political contexts. Finally, challenges for the future are identified.

## THE LESSER OF TWO EVILS: INEQUITY V. INEQUALITY IN PUBLIC SCHOOL FUNDING

Misty D. E. VanMeter

Sponsor: Kathleen Murphey

School of Education

Observation of current public school funding policies and research into their adequacy in implementation has shown that it is now necessary for each of the United States to reevaluate their funding procedures and consider as a possible solution mandating equal governmental funding from the local to the federal levels of all public schools. This research was performed with the intent to show how important it is to American Citizens for funding policies to be reevaluated in order to meet the needs of modern times. The research was conducted by consulting a number of contemporary sources published on the topic. Analysis of the sources uncovered common fears and misconceptions that need to be addressed in order to make equal funding of public schools possible.

**SCHOOL OF  
ENGINEERING, TECHNOLOGY,  
AND  
COMPUTER SCIENCE**

## INTERACTIVE ELECTRONIC MAIL

Bradley E. Mergy

Sponsor: Beomjin Kim

Department of Computer Science

With the advances in technology and with the common use of electronic mail (e-mail), we have developed an application that allows a user to interactively view their e-mail. In the existing e-mail applications, the user can only view their e-mail in a passive text mode. With our system, the user can see their e-mail based on the text mode, but also based on images that are generated from given text. This graphics-based text representation will help a user who can see their lengthy text-based information at a glance and can more easily understand their delivered information. Moreover, by providing various information viewing methods, the user plays an active role to see their information (see the information based on his/her preference), instead of a passive role in the existing e-mail applications.

This application can be applicable to various cases around our life. For this presentation, we applied our idea to two commonly used events, a student grade reporting system and a monthly phone billing system. The server side application will collect information from a Database and generate a text-based packet. The packet is attached with e-mail and delivered to the user over the Internet. With the provided client side application (either application or Java Applet), the user can manipulate the packet information and see the contents with their preferences. In the monthly phone billing system, a customer can filter out unconcerned detail billing information and also see their phone usage with more easily understandable graph form. Our application has simulated the above two cases with custom developed software that was written with the Java programming language along with the Microsoft Access database.

The application gives more information viewing flexibility to the user. By interfacing our application to existing document generating system, our method will save labor and time. Equally important, the application will save costs and help environmental issues by reducing wasted paper and postage.



**SCHOOL OF VISUAL  
AND  
PERFORMING ARTS**

## IGBO CULTURE AND IPFW STUDENTS

Paula Wentz-Crill, Vicki Flora, Lea Ann Gebhard, Linda Gonya

Sponsor: Samantha S. Birk

Department of Visual Arts

Traditional *Igbo* (IG-bo) *mbari* (EM-bar-ee) are only found in the *Owerri* region of Igboland (present day Nigeria), and most likely did not originate with the *Igbo* but survives through them. *Mbari* are often dedicated to deities and portray everyday life in the traditional African village. Members of HON 300 –African Art chose to create an *mbari* celebrating the many forms of diversity unique to IPFW that would conform, in principle, to an *Igbo mbari*. For this project, it was the process of researching and understanding *Igbo mbari* shrines, working in a group, and creating the themes that best hold to the *mbari*'s traditional principles. The resulting project, created of non-permanent materials (cloth and paper maché), took two forms: a diversity celebration *mbari* and a commuter *mbari*, which were installed on the IPFW campus for one week, fall semester 1999.

**DIVISION OF PUBLIC  
AND  
ENVIRONMENTAL AFFAIRS**

## JUVENILE SEX OFFENDERS: IS TREATMENT POSSIBLE IN FORT WAYNE, INDIANA

Holly R. Castiaux-Logan

Sponsor: David May

Division of Public and Environmental Affairs

The rise of sex crimes by children against children is no longer America's best kept family secret. Studies have suggested that sexual aggression may be linked to past abuse. National data suggests that most juvenile sex offenders are responsive to treatment if provided with specialized therapy. This study looks into the treatment for juvenile sex offenders in Fort Wayne, Indiana. A survey was distributed to five agencies working with children and juveniles in Fort Wayne in 1998. The study indicates that there is a need to develop a facility for juvenile sex offenders to facilitate the treatment process and provide appropriate treatment interventions so that juvenile sex offending does not become part of a vicious cycle. A sex offending treatment facility would offer a better understanding of the differences between the groups of juvenile sex offenders and would provide guidance regarding appropriate sanctions and treatment. Treatment developed for the individual needs of juvenile sex offenders could result in a reduction in sex offending and reoffending, ultimately reducing the number of individuals entering the juvenile justice systems.



## A REVIEW OF JUDICIAL SENTENCING: METHODS AND INFLUENCES

Jamie L. Michell

Sponsor: David C. May

Division of Public and Environmental Affairs

Research suggests that many factors play an important role in judicial sentencing. Guided by an extensive review of sentencing procedures, economic, social, and psychological influences on judicial sentencing, and the public perception of the accuracy and reasoning of judicial sentencing decisions, this research attempts to determine the methods of sentencing and influences on those methods in the United States. The results indicate that regulations mandated by state legislatures and financial costs to the criminal justice system and the public play a crucial role in judicial determination of sentencing lengths. Further, misperception of the specifics of court cases causes inaccuracies in the public opinion of judicial sentencing as lenient. Overall, judicial sentencing does reflect the will of the public, but is sometimes overshadowed by outside factors that hinder the process.

## PRISON OVERCROWDING: CAUSES AND CURES

Elizabeth A. Russo

Sponsor: David C. May

Division of Public and Environmental Affairs

In recent years, the number of prisoners in the United States has increased dramatically, even though the amount of crime has decreased. This study, through a historical literature review of sentencing policies in the United States, uncovers that there are three primary explanations for the present overcrowded conditions in prison. These explanations are as follows. First, in the 1970's, legislators throughout the United States moved from indeterminate to determinate sentencing. Secondly, also in the 1970's, parole was abolished in the federal system and in many states. Finally, mandatory sentences for drug-related offenses were implemented in many jurisdictions in the 1980's. The combination of these factors has caused the United States to have the second highest (after South Africa) imprisonment rate in the world. The explanations and implications of these findings are also discussed.

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# **SYMPOSIUM SCHEDULE**



# SCHEDULE OF EVENTS

## Indiana University-Purdue University Fort Wayne Undergraduate Research and Creative Endeavor Symposium

Tuesday, April 18, 2000

Walb Memorial Union

	WALB 110	WALB 114	WALB 116
9:15 - 10:15a.m.	<p>David P. Bell <i>Fishing Techniques and Annual Production of the Fishermen of Northern Chile</i></p> <p>Lea Ann Gebhard, Paula Wentz-Crill, Vicki Flora, &amp; Linda Gonya <i>IGBO Culture and IPFW Students</i></p> <p>Bradley E. Mergy <i>Interactive Electronic Mail</i></p> <p>CHAIR: Kathleen A. Murphey Associate Professor of Education</p>		<p>Kelly S. Blosser <i>Constructing Concepts in Mathematics-A New Instructional Strategy</i></p> <p>Carrie L. Giant <i>Perceptions of Aggressive Parental Behaviors and the Impact on Adult Self-Concept: The Role of Perceived Parental Support</i></p> <p>Elizabeth A. Russo <i>Prison Overcrowding: Causes and Cures</i></p> <p>CHAIR: David C. May Assistant Professor of Public and Environmental Affairs</p>
10:30 - 11:30a.m.	<p>Matthew S. Cashdollar <i>The Importance of Music in America's Schools</i></p> <p>Jennifer R. Marlow &amp; René M. Dickerhoof <i>Reactions to an Ambiguous Hypothetical Peer Group: Evidence for an Adolescent Imaginary Audience?</i></p> <p>Joe Mattox, Gloria Rodrigues, Sahsha Spangler &amp; Sharon Zumbrun <i>Economic Implications of Divorce</i></p> <p>CHAIR: Raymond Marchionni Professor of Music</p>		<p>Mansur Omar <i>Modeling Electrical Circuits Using Differential Equations</i></p> <p>Rhonda M. Passino &amp; Carrie L. Giant <i>To Be Thin or To Be "Buff": Relations Among Appearance-Related Feedback and the Body Image Concerns of Females and Males</i></p> <p>Rachel Seabold &amp; Andrea Baker <i>Expanded Healthcare in Veterinary Medicine</i></p> <p>CHAIR: Hedayah Samavati Associate Professor of Economics</p>

	WALB 110	WALB 114	WALB 116
11:30 - 12:30p.m.			
12:30 - 1:30p.m.	<p>René M. Dickerhoof &amp; Jennifer R. Marlow <i>An Exploratory Analysis of Daydream Content, Separation-Individuation Concerns, and Self-Concept During Adolescence</i></p> <p>Nelson D. Lourenço, Martha J. Miles &amp; Tania R. Sebastiao <i>A Comparison of Economic Well-Being of Women in United States to That in Brazil</i></p> <p>Jamie L. Michell <i>A Review of Judicial Sentencing: Methods and Influences</i></p> <p>Misty D. E. VanMeter <i>The Lesser of Two Evils : Inequity V. Inequality in Public School Funding</i></p> <p>CHAIR: Patricia A. Sellers Assistant Professor of Education</p>	<p>POSTER PRESENTATIONS:</p> <p>Gordon R. Huffman &amp; Jeffrey B.-H. Tok <i>Understanding the Binding Site of a Novel Organic-Based RNA Cleaving-Aminoglycoside Antibiotic</i></p> <p>Mai Lu &amp; Jeffrey B.-H. Tok <i>Towards the Synthesis and Studies of "Super"-Aminoglycoside Antibiotics</i></p> <p>Cynthia A. Stahl <i>Conversational Patterns of a Mother and Her Twins</i></p> <p>CHAIR: Kimberly S. McDonald Associate Professor of Organizational Leadership and Supervision</p>	<p>Holly R. Castiaux - Logan <i>Juvenile Sex Offenders: Is Treatment Possible in Fort Wayne, Indiana?</i></p> <p>Amanda Marie Miller <i>Walt Disney's Divinely Inept Children's Classics</i></p> <p>Sarah L. Surface <i>Mineralogical Analysis of the Thunder Mountain Quartzite: Determining Age Relationships in the Mountain Shear Zone, Oconto County, Wisconsin</i></p> <p>Robin L. Smith, Jason J. Roebel, &amp; Herminia V. Costa <i>The Glass Ceiling, What Is It, Does It Still Exist, and What Are Its Effects?</i></p> <p>CHAIR: Raymond Marchionni Professor of Music</p>



	WALB 110	WALB 114	WALB 116
1:45 - 3:45p.m.	<p><i>Graduate Student Presentations</i></p> <p>Aaron B. Brune <i>John S. Irwin Elementary School-History as a Magnet School</i></p> <p>Nancy K. Mann <i>Early Teens and Money</i></p> <p>Theresa E. Grotrian <i>Public School Systems Versus a Voucher System</i></p> <p>Leslie Raymer <i>History and Future of Spanish Immersion in Fort Wayne Community Schools</i></p> <p>CHAIR: Avon Crismore Professor of English</p>		<p><b>SIGMA XI COMPETITION:</b></p> <p>Willard D. Barnhouse <i>Mineral Composition in the Baldwin Conglomerate</i></p> <p>Sarah E. Fey, Joshua Prabhakar &amp; George S. Mourad <i>Molecular Mapping of a Gene Involved in the Uptake of Nucleotides, the DNA Building Blocks</i></p> <p>Leisel D. Masson <i>Isolation of a Feather-Degrading Bacteria from the Plumage of Raptors</i></p> <p>Stacci N. McVay <i>Fourier Transform NMR Measurements of Spin-Lattice Relaxation in Complex Hydrides, <math>[MH_6]^+</math> (M=Fe and Ru)</i></p> <p>Carly M. Myers <i>"When You Lose Your Neighborhood, You Lose Everything...": A Study in the Loss of a Language</i></p> <p>Ayesha Rahman <i>Virtual Health Care?</i></p> <p>Tamra L. Reece <i>On the Double-Stranded Trail of the Kennewick Man: Controversy Between the Rights of Scientist and the Rights of Native Americans in Preserving the Human Past</i></p> <p>Gabriel M. Skidd <i>A New Transition Metal Hydride, <math>[RuH_6]^+</math></i></p> <p>Sarah L. Surface <i>Strategies for Processing Cultural and Natural Materials From Sediments: A Comparative Study of Geological Wet Sieving and Archaeological Flotation Methods</i></p> <p>CHAIR: Elliott J. Blumenthal Associate Professor of Biology</p>

# **RESULTS OF THE 2000 SIGMA XI COMPETITION**

## ***Winner:***

**Leisel Masson**

***Isolation of a Feather-Degrading Bacteria from the Plumage of Raptors***

## ***Judges:***

**Carla R. Barrett**

***Supervisor, Life Sciences Resource Center***

**Elliott J. Blumenthal**

***Associate Professor of Biology***

**Steven A. Kuhl**

**Assistant Professor of Biology**

**David A. Legg**

***Professor of Mathematical Sciences***

## ***Chair of the Competition:***

**Elliott J. Blumenthal**

**Associate Professor of Biology**



# TABLE A

## PRESENTATIONS BY SCHOOL AND DEPARTMENT

<b>School of Arts and Sciences</b>	<b>20</b>
<b>Audiology and Speech Sciences</b>	<b>1</b>
<b>Biology</b>	<b>3</b>
<b>Chemistry</b>	<b>4</b>
<b>English and Linguistics</b>	<b>2</b>
<b>Geosciences</b>	<b>3</b>
<b>Mathematical Sciences</b>	<b>1</b>
<b>Psychology</b>	<b>4</b>
<b>Sociology and Anthropology</b>	<b>2</b>
 <b>School of Business and Management Sciences</b>	 <b>4</b>
<b>Economics</b>	<b>3</b>
<b>Management and Marketing</b>	<b>1</b>
 <b>School of Education</b>	 <b>7</b>
 <b>School of Engineering, Technology, and Computer Science</b>	 <b>1</b>
<b>Computer Science</b>	<b>1</b>

<b>School of Visual and Performing Arts</b>	<b>1</b>
<b>Visual Arts</b>	<b>1</b>

<b>Division of Public and Environmental Affairs</b>	<b>3</b>
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<b>Total</b>	<b>36</b>
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# TABLE B

## PRESENTATIONS BY TYPE

Poster:	
Undergraduate	3
Graduate	0

Lecture:	
Undergraduate	29
Graduate	4

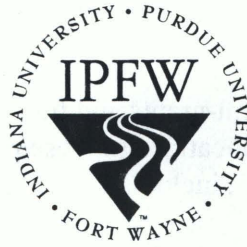
<b>Subtotal 32 (U)</b>	<b>Subtotal 4 (G)</b>
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<b>Total Presentations</b>	<b>36</b>
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**ANNUAL REPORT**

**THE OFFICE  
OF  
UNDERGRADUATE  
RESEARCH  
AND  
CREATIVE ENDEAVOR**





VICE CHANCELLOR FOR ACADEMIC AFFAIRS

REPORT OF THE DIRECTOR

During 1999-00, the Office of Undergraduate Research and Creative Endeavor conducted its full complement of programs for the second year in a row: the Supplies and Expenses Mini-Grants Program, the Travel Support Program, the Summer Grants for Research and Creative Endeavor Projects Program, and the Undergraduate Research and Creative Endeavor Symposium. Except for the Summer Grants for Research and Creative Endeavor Projects Program, participation levels were similar to 1998-99.

The Supplies and Expenses Mini-Grants Program attracted five applications; the Undergraduate Research and Creative Endeavor Committee recommended that four of them be funded.

The Travel Support Program received fourteen applications for funds to present at discipline-specific conferences; the Committee recommended that twelve of them be funded.

The Summer Grants for Research and Creative Endeavor Projects Program received eight applications; the Committee recommended that all eight be funded. The Summer Grants Program received eight applications; in 1998-99, it received thirteen. Neither the Committee nor the Director believes that this indicates less interest in research. Quite the contrary. The eight applications that were received came from six disciplines, including one arts discipline and one humanities discipline. The greater range of disciplines from which applications came in 1999-00 suggests that undergraduate research and creative endeavor is widespread at IPFW and that the faculty--and the students--are responsive to the programs of the Office of Undergraduate Research and Creative Endeavor. In addition, the awards committee judged the applications much better prepared than last year.

Diversification also characterized the third Undergraduate Research and Creative Endeavor Symposium. The number of presentations at 32 (in addition, four graduate students made presentations) was down from 34 in 1998-99 but even with 1997-98. Diversification of participation, however, continued. Students from three disciplines--public and environmental affairs, management and marketing, and visual arts--presented for the first time.

Three program improvements were implemented this year:

1. Two of the funded programs--mini-grants and travel grants--operated with an expanded call for proposals-calendar. Applications to these programs are now received three times between October 15 and April 15, including a spring application date for fall awards.
2. Students receiving Summer Grants for Research and Creative Endeavor Projects may elect to receive the \$500.00 award as stipend, supplies and expenses grant, or a combination of the two. Previously, the award was stipend only. The new system benefits students who have expenses associated with their research. For Summer 2000, only one of the eight recipients elected stipend-only payment.
3. Promotion of the undergraduate research and creative endeavor programs was expanded. Calls were distributed electronically as well as by poster and in print media, the Office initiated a Web page, and the Director was a guest of four schools to discuss undergraduate research and creative endeavor.

The budget for the Office's programs was \$10,018, a slight increase over the previous year, and was allocated as follows:

Research and Creative Endeavor Symposium	\$ 618.00
Travel Support	
Undergraduate Conferences	300.00
Discipline-specific Conferences	2,100.00
Mini-Grants	600.00
Summer Grants	<u>6,400.00</u>
<b>Total</b>	<b>\$10,018.00</b>

Two sources of income funded the budget: The Office of the Vice Chancellor for Academic Affairs awarded \$6,018 and the Indiana University Research and University Graduate Schools awarded \$4,000. The grant from RUGS was dedicated to the Summer Grants for Research and Creative Endeavor Projects Program.

Undergraduate research is marginally funded. Mini-grants are capped at \$200.00; travel grants are capped at \$250.00. These caps are kept low to spread support among qualified applicants. The awards made, however, are always below these caps, even at the present modest level of applications to the Committee on Undergraduate Research and Creative Endeavor. Students are bearing substantial additional expense, even with supplements from school and department offices, to carry out research projects and to present research findings at discipline-specific conferences.

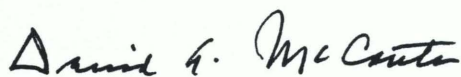
A stated goal of the plan for undergraduate research and creative endeavor at IPFW is to integrate undergraduate research and the curricula. During 1999-00, the Undergraduate Research and



A stated goal of the plan for undergraduate research and creative endeavor at IPFW is to integrate undergraduate research and the curricula. During 1999-00, the Undergraduate Research and Creative Endeavor Committee authored Guidelines for Research Certificates at IPFW. Individual departments shall specify how the guidelines shall apply to their disciplines. The proposal has been endorsed by the IPFW Curriculum Review Subcommittee and the Indiana University Academic Officers Committee. It is ready for presentation to the Indiana University Board of Trustees for approval for IU missions at IPFW and for presentation to Chancellor Wartell for approval for PU missions at IPFW.

The Guidelines provide for coherent research curricula which culminate in intensive individual research projects. Under the guidelines students will learn research methods and tools appropriate to the discipline and their research interests within the discipline; learn the foundations of research in the history, philosophy, and theory of the discipline; learn advanced communication skills; and apply these learnings by designing and executing a research study or project and communicating the results to others. The certificate will fulfill two needs: (1) it will encourage the faculty to provide structured experiences for students that integrate original research and the undergraduate curriculum of a discipline; and (2) it will recognize the distinctive academic experience of students who pursue the certificate as well as the major in a discipline.

Three members of the Undergraduate Research and Creative Endeavor Committee are concluding their service: Kimberly McDonald (Organizational Leadership and Supervision), Clifford Scott (History), and Patricia Sellers (Education). All three have been part of the program since its planning stage and have shaped its direction and operations. A hearty thank you to each of them.



David A. McCants  
Associate Vice Chancellor for Academic Affairs  
May 2000

**Appendix A**  
**Travel Support Program Awards**  
**1999-00**

<b>Student's Name</b>	<b>Title</b>	<b>Occasion</b>	<b>Advisor</b>
<b>Baus, Eric</b>	<b>Writing Center Consultants as Cultural Informants</b>	<b>East Central Writing Centers Association Conference, East Lansing, March 30-April 1</b>	<b>Freeland, Katherine (ENGL)</b>
<b>Bell, David</b>	<b>Fishing Techniques and Production of the Fishermen of Northern Chile</b>	<b>Central States Anthropological Society, Bloomington, April 20-23</b>	<b>Kuznar, Larry (SOCA)</b>
<b>Breitenbach, Betsy</b>	<b>Confronting and Combating our Concern: Effectively Consulting ESL Students</b>	<b>East Central Writing Centers Association Conference, East Lansing, March 30-April 1</b>	<b>Freeland, Katerine (ENGL)</b>
<b>Bruening, William</b>	<b>Life of the Orishas in Cuba</b>	<b>Central States Anthropological Society, Bloomington, April 20-23</b>	<b>Sandstrom, Alan (SOCA)</b>
<b>Buck, Heather</b>	<b>Non-directive Strategies for Helping Students Integrate Writing Cultures</b>	<b>East Central Writing Centers Association Conference, East Lansing, March 30-April 1</b>	<b>Freeland, Katherine (ENGL)</b>
<b>Burns, Edward</b>	<b>The Basis of Bias: Courts and Child Custody</b>	<b>North Central Sociological Association, Pittsburgh, April 13-16</b>	<b>Nusbaumer, Michael (SOCA)</b>
<b>Crandell, Kim</b>	<b>Utilization of PAH Mixtures by a Sediment Bacterium</b>	<b>American Society for Microbiology 100<sup>th</sup> General Meeting, Los Angeles, May 21-25</b>	<b>Ross, Deborah (BIOL)</b>